# Traffic Engineering

**Official Publication of the Institute of Traffic Engineers**

**VOLUME XIX** | **JULY, 1949** | **NUMBER 10**

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## *May We Offer . . .*

**COVER:** Artist's conception of Port Authority $20,000,000 bus terminal. The Ninth Avenue end of the terminal (not shown) has a connecting ramp with the Lincoln Tunnel. Roof parking space will be provided for 450 cars.

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**Published Monthly by the**
**INSTITUTE OF TRAFFIC ENGINEERS**

**PUBLICATION** office: 400 Watchung Avenue Plainfield, New Jersey

**EDITORIAL AND ADVERTISING** offices: 212 Strathcona Hall, New Haven 11, Connecticut.

Entered as second class matter November 7, 1941, at the Post Office at Plainfield, New Jersey, under Act of March 3, 1879.

Single copies 20c, subscription price $2.00 per year in the United States. Other publications of the Institute of Traffic Engineers include Annual Proceedings, Traffic Engineering Handbook, and Technical Bulletins.

Permission to reprint contents with customary credit line is given unless otherwise stated.

# LETTERS TO THE EDITOR

### THE "HORSELESS BUGGY"

Our many years of careful research into the beginnings of automobile production in the United States have convinced authoritative institutions and publications that they should revise their texts and accord proper credit to J. Frank Duryea for his creative work on America's first gasoline automobile.

On the following pages are briefly set forth new conclusions, reached after impartial inquiry into this subject, by three of the nation's leading authorities:

**Smithsonian Institution**
**United States National Museum**
**Automobile Manufacturers Association**
**The World Almanac**

The net of these findings is: (1) that J. Frank Duryea deserves equal credit with his brother, Charles E., for designing and constructing the "horseless buggy" which was the first American gasoline automobile; (2) that J. Frank Duryea was the first to operate that vehicle on September 21, 1893; and (3) that J. Frank Duryea was the winning driver in America's first automobile race, November 28, 1895, Chicago to Evanston, Illinois, and return.

We will be happy to furnish further evidence and answer detailed questions. In the meantime, we respectfully suggest that you review your texts for forthcoming editions, so as to preclude any inaccuracies or misstatements.

**Frederick H. Elliott**
**Secretary**
Automobile Old Timers
New York City

———o———

### DRIVE-IN THEATERS

In an article prepared by Mr. Charles R. Waters for the November 1948 issue of TRAFFIC ENGINEERING ("Drive Ins"), reference is made to a survey of drive-in theaters by the State of New York. Could you tell us the agency involved or a source where we might procure a copy of this study?

We are attempting to gather information on municipal licensing or regulation of outdoor theaters and would appreciate any data you might have with respect to their location or design.

**Anders O. Hustvedt**
**Research Analyst-Consultant**
American Municipal Association
Chicago, Illinois

● This study was compiled by the AASHO Committee on Roadside Control, of which J. E. Johnston, Traffic Engineer, Department of Roads and Irrigation, Lincoln 9, Nebraska, is Chairman. It includes information obtained from surveys made by all of the States and is a very fine report. As copies are not available in this office, I am asking Mr. Johnston to forward one to you—ED.

———o———

### GENERAL

Congratulations on your new job as Editor of Traffic Engineering. The first issue under your guidance looks great and I think the step should have been made a long while ago since it has been quite a chore for volunteers to undertake.

**Francis E. Twiss**
**Associate Mem., ITE**
U. S. Chamber of Commerce
Washington D. C.

———o———

May I take this opportunity to congratulate both you and Miss Lincoln on your appointment as Editor and Managing Editor, respectively. I'm sure the publication of Traffic Engineering is now in very capable hands.

**W. H. Armstrong**
**Associate Mem., ITE**
Ohio Department of Highways
Columbus, Ohio

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# Plans For An Unusual Street

*by* HENRY K. EVANS *(Mem. ITE)*

The City of San Francisco was recently presented with a plan involving over $200,000,000 worth of traffic improvements, including freeways, subways, public transit modernization and off-street parking garages.[1] Not included in the estimated 200-million dollar expenditure, but very much a part of the recommended plan were recommendations for street traffic control improvements involving one-way streets, channelizing islands, traffic signals and other regulatory measures. While cost of these betterments will be insignificant compared to costs of proposed freeways, subways and terminals, yet their effects on traffic flow will be far from insignificant. This is a fact too often overlooked by the public and by officials, blinded, as it were, by the glamor of the more spectacular improvements.

It is the purpose of this article to point up one particular phase of the planning for better traffic control in San Francisco, specifically some rather unique plans for solving the tough operational problem of traffic control on Market Street.

## Market Street, An Unusual Street

It is said that when city planner Jasper O'Farrell laid out San Francisco in 1847, he located Market Street approximately on the line of the old trail leading from the little settlement, then called Yerba Buena, up to the Spanish Mission. The street pattern to the north of this thoroughfare was continued as begun by the first settlers, with parallel streets spaced closely together in conformance with practice brought from the East. But blocks in the area from Market Street south were laid out with dimensions twice the size and an area four times that of those to the North, being purposely subdivided into oversize blocks because of the lower unit value of land and the lesser desire and value of corner lots and street frontage property. The streets south of Market were established parallel to Market Street since the major needs for travel were to and from the Mission.

Whatever the reasons in back of the present street layout, San Francisco has inherited a system where all streets to the north and half of those to the south converge onto Market Street in a series of complex intersections that render this broad thoroughfare unusual indeed in the manner of intersection layout.

The portion of Market Street lying within the central business district of the city extends two miles between the ferry building at the Embarcadero and Van Ness Avenue on the west. In this distance lie 23 intersections of Market Street, including four three-point, seven four-point, 10 five-point, and two six-point junctions, truly a challenge to the ingenuity of one who would seek to devise a system of traffic control to eliminate the many conflicts among traffic movements at the intersections.

[1] **"Transportation Plan for San Francisco", De Leuw, Cather & Co., Consulting Engineers and Ladislas Segoe and Associates, Consulting City Planners.**

Figure 1 illustrates the types of vehicular conflicts that are developed at most of the five-point intersections, now controlled by two-phase traffic signal operation. Points of direct vehicular conflicts at the twenty-three intersections total 26 under present conditions. Small wonder it is then that three of the four most hazardous intersections in the entire city are located in this section of Market Street.

Due to the large expanse of street

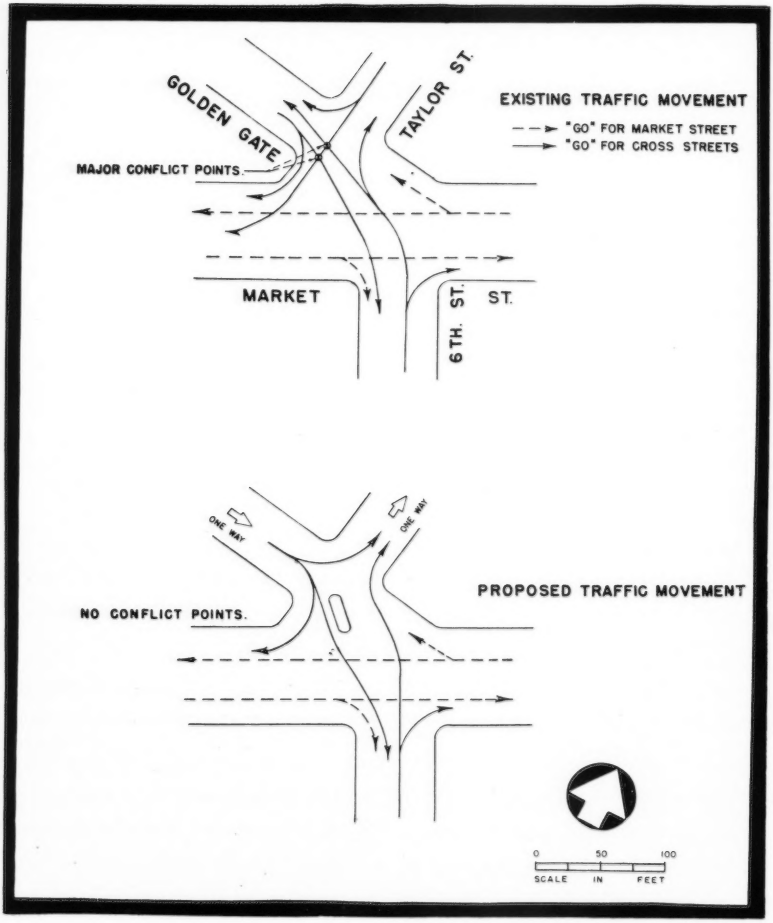


**Figure 1. The top diagram shows the types of conflict that occur at most of the intersections on Market Street at present. The bottom diagram shows how the conflict points would disappear under the proposed one-way plan.**

area and many turning movements at these complex intersections, pedestrians are subjected to unusual hazard. Distances on the order of 150 feet must be traversed between curbs at a good proportion of the junctions. Vehicular right turns off Market Street frequently take place at relatively high speeds because only a slight change in direction is needed to proceed onto one of the intersection legs, thus endangering pedestrians.

Adding to the difficulties imposed by intersections are the operations of street car and bus lines which turn into and off of Market Street at frequent intervals. Downtown Market Street is the public transit trunk line for San Francisco and must of necessity remain so in the future. For many years there were four street car tracks on this street (Fig. 2), carrying the cars of two competing operators. Recently these have been consolidated under city ownership and the two outer tracks abandoned. However, the points where these lines turn into Market Street have continued to be focal points for congestion and accidents.

## One-Way Plan

A rather unique one-way street plan has been proposed as a means of eliminating the conflicting traffic movements at Market Street intersections, as well as to simplify traffic control and facility of movement on the remainder of the business district streets. This is illustrated by Figure 3.

Referring first to the areawise plan, the abnormally small blocks (approximately 266 x 400 feet) in the area north of Market Street unduly complicate intersection control. The blocks are too short for proper synchronization of traffic signals for two-way progressive traffic movement; however, under one-way operation the block length does not matter and progressive timing may be instituted without complication.

The extent of benefit to be realized by this improvement is indicated by the results of a speed-delay study of Post Street which showed that three-fourths of the traffic delay on this important east-west artery resulted from waiting at traffic signals. The one-way plan, by permitting progressive movement, will practically eliminate this type of delay. Eliminating the left-turn conflict will aid greatly in speeding up the presently congested traffic flow, and conversion of many of the streets from two-lane two-way streets to three-lane one-way streets will increase traffic capacity by 50% or more. (Note that whereas many streets are wide enough for three moving lanes, only two lanes are used under present two-way system). Finally, the one-way plan is designed to operate in conjunction with the proposed distributor freeway loop around the periphery of the central business district.

A careful analysis of all possible vehicular movement conflicts existing now reveals that institution of the plan

**Figure 2. Market Street (at Fremont) looking westward prior to removal of the two outer tracks.**

will reduce the conflict points by one-third in the area affected.

By simplifying the traffic movements, the one-way plan will eliminate the 26 existing conflict points on downtown Market Street. Referring to Figure 1 it is seen that at the Market Street and Golden Gate Avenue intersection, one of the five legs is made one-way away, the other made one-way toward Market Street, thereby converting this in effect into a normal two-way junction and eliminating the two unusual conflicts. The conflict caused by left-turns is not shown either in the existing or proposed plan. These turns are to be prohibited at all intersections on Market Street except at points where no conflict will result.

## Some Unusual One-Way Streets

Referring to Figure 3, it is evident that the one-way rule has been applied to one or two-block long sections of street at several intersections. This was done for the purpose of simplifying Market Street intersection control. Since the other streets involved do not warrant the one-way operation, there existed no reason for continuing the rule further than necessary for intersection control.

An unusual treatment is also accorded Oak, Fell and Hayes Streets near Gough Street, where one-way streets are reversed (see Figure 3). Due to existing street layout in the western portion of the city Oak and Fell function naturally as a pair of one-way streets, with Fell westbound and Oak eastbound. However, these one-way streets, if taken into Market Street, would greatly complicate the situation, among other things requiring three-phase signal operation at the very heavily traveled intersection of Oak, Van Ness and Market. It is proposed to construct two diagonal streets as shown by dotted lines on Figure 3. Since these blocks will be occupied by the proposed Panhandle Freeway, the acquisition now for these diagonal streets will fit in with future plans nicely. Until these two diagonals are constructed, the one-way plan shown permits operation over existing streets.

The purpose of the two-block one-way rule on Haight Street is two-fold. First it simplifies control of the intersection of Market Street. Secondly it permits westbound traffic intending to turn south off Market Street to use this two-block one-way street to Laguna, turning left to go south across Market Street under two-phase signal control. Thus the left-turning movement off Market at Laguna may be prohibited, adding to the facility of movement on Market Street. This ties in with the ultimate through-street pattern since Laguna will be a major north-south arterial, hence special provision is necessary for interchange between Market and Laguna.

## Signal Timing for Transit

As an integral part of the traffic control plan for Market Street, a signal timing plan was devised to be of maximum effectiveness in moving buses and streetcars. First of all it was determined that preference of movement should be accorded transit vehicles, in view of the fact that they carry about 80% of the passengers on this street and also because the automobiles, taxis and trucks travel only short distances before turning off Market Street. Therefore, the through-band speed of progression in the proposed signal time-space diagram is set at 11 m.p.h. for off-peak operation and 9 m. p.h. for peak hour operation (in downtown section).

The 9 and 11 m.p.h. speeds were arrived at by two separate methods. First, the average speed was calculated, assuming standard acceleration, mid-block speed and deceleration rates, and

taking into account the delay due to passenger boarding and alighting operations. Secondly, the average speed was calculated by subtracting from present overall trip times the actual observed delay as caused by signals. Under the new plan, transit vehicle delay at traffic signals should be practically zero. The results of the two methods were within one-half m.p.h. of each other, hence a considerable degree of confidence is placed in them.

The boarding and alighting delays were accurately measured over a period

DIAGONALS
DE LEUW, CATHER & CO, CONSULTING ENGINEERS • LADISLAS SEGOE, CONSULTING CITY PLANNER OCTOBER 1948
PLAN OF ONE WAY STREETS
EXISTING ONE WAY STREETS
PROPOSED ONE WAY STREETS
PROPOSED TWO WAY STREETS
(EXISTING ONE WAY)
PROPOSED ONE WAY STREETS AFTER COMPLETION OF BAYSHORE FREEWAY

FIG. 3

of several days by a special field study crew of six men. The trip overall running times and duration of delays were found by transit speed-delay studies conducted by crews who rode inside the buses and streetcars on repeated trips.

Since the buses and streetcars, in order to benefit by the through-band progressive timing, must not fall out of the band, it is important to provide a sufficient width of band, in seconds, to permit "jockeying". If the band width is too narrow, the bus will be caught by a red signal. With a sufficient width, the bus can accelerate and make up lost time, thus averaging 9 or 11 m.p.h., as the case may be.

The minimum width of through-band in the peak hour is set at 26 seconds. Thus the only time that a vehicle is in danger of falling out of the band is where a stop of 26 seconds or more is made. Studies show that only 6% of the transit loading delays equal 25 seconds or more, hence in only one stop out of about 17 on the average would a vehicle fall out of the through band due to a loading zone delay. Thus for the majority of the time, transit vehicles will be able to stay with the through-band.

Signal timing is further simplified by special treatment at two "T" intersections within several hundred feet of adjacent complex intersections. Signals operate at Second Street and at Fifth Street at present, and prevent development of progressive timing for both directions simultaneously because of the short distance between signalized intersections. Under the new plan right turns only are permitted onto Market Street at the T junctions, with Market Street traffic signals controlling only the eastbound direction. The

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westbound direction receives no signal indication, hence no problem is encountered in timing for progressive movement in both directions.

Figure 4 shows the proposed timing plan for the off-peak period. The peak flow period diagrams, not shown, provide a straight through band for eastbound and westbound traffic into and out of the central business district.

## Skip-Stop Plan

The plan for reducing conflicts and speeding up movement in general on Market Street incorporated a reduction in the number of transit loading zones. Under the previous arrangement there were 24 locations where streetcars stopped on Market Street between the Ferry Building and Van Ness Avenue, a distance of two miles. Thus the average distance between stops was 430 feet.

Under the new plan recently put into effect as the first phase of the remodeling of Market Street traffic control, a quarter of the established stops are skipped. Now there are stops only at 18 intersections, generally

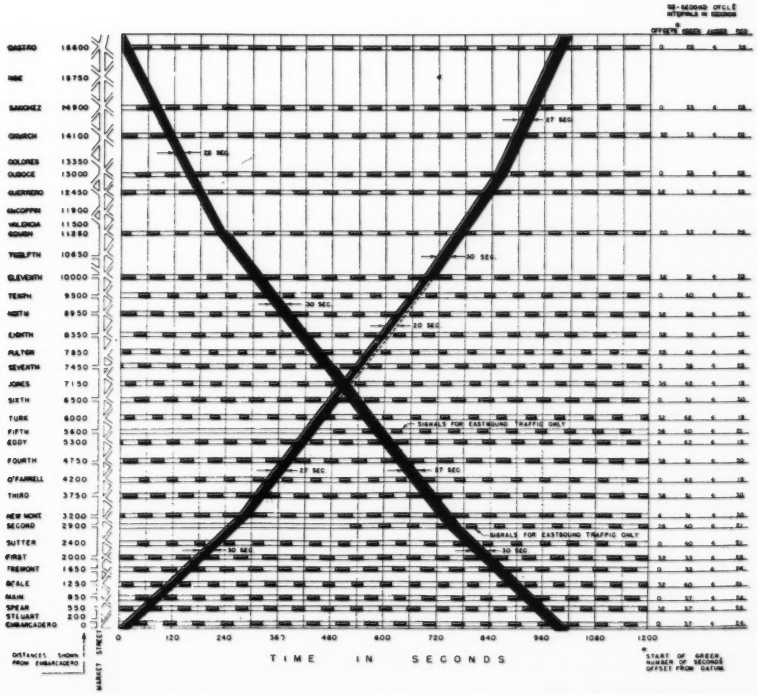



**Figure 4. Proposed off-peak timing plan for Market Street. Speed here is set at 11 mph, a little faster than during the peak. Both directions of flow are given an equal advantage since flow is about evenly divided between inbound and outbound.**

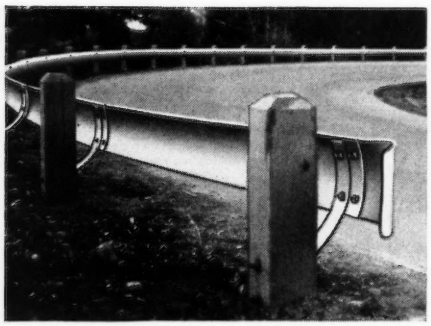
with streetcar zones on the near side and bus stops on the far side of the intersection. Stops now average 550 feet apart.

Proof of the efficacy of the skip-stop plan is found in the following data, showing a comparison of average streetcar speeds both before and after inauguration of the skip-stop plan.

| *Traffic Flow Period* | *Average Trip Speed—MPH Before* | *Average Trip Speed—MPH After* | *Per Cent Increase* |
|---|---|---|---|
| *Off-Peak* | 6.5 | 7.7 | 19% |
| *Peak* | 3.8 | 5.4 | 42% |

Comparisons of motor bus speeds are not possible because there was none operating on Market Street before the skip-stop plan was initiated.

The "after" speeds, though considerably better than the "before" speeds, will be improved still more through better signal timing. This will be effected in the near future by replacement of the present outmoded inflexible equipment with a modern flexible progressive system. This fact is brought out by the results of the transit speed and delay studies which show traffic signal delays averaging 200 (off-peak) and 315 (peak hour) seconds per trip (two miles) while stops for passenger boarding and alighting averaged only 135 (off-peak) and 240 (peak hour) seconds per trip. It is expected that the signal delays will be practically eliminated under the new signal control plan.



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# Traffic Safety Lighting

*by* J. W. A. BOLLONG, *(Mem., ITE)**

**Ed. Note: A paper presented at the January 1949 meeting of the Seattle Chapter, Illuminating Engineering Society.**

The advantages of Modern Traffic Safety Lighting are so numerous and the need for improvement of our present system is so obvious that it would hardly seem necessary to call attention to them.

For a great many years, Seattle was known as the best lighted city in America. We lost that reputation some time ago as other cities began replacing out-dated cluster and ornamental lighting systems with modern traffic safety lighting.

Seattle's cluster and ornamental lighting system was built in 1928 and 1929 and before, for Model-T traffic at twenty miles an hour, and the balance for horse and wagon days at five miles an hour. It was all right in those days, but it does not meet the demands of present population and traffic flow.

During the past 14 years 625 children and adults, *all pedestrians*, have been killed in night traffic accidents on Seattle streets. Modern traffic safety lighting would have saved 40% of these lives. This is not a guess. Statistical facts combined from many cities before and after installation are the proof. One and one-half years ago Seattle installed modern traffic safety lighting (mercury vapor pendent type) on a portion of Fourth Avenue South. A tabulation of 10 months' accident experience before and after the installation show:

| | BEFORE | | AFTER | |
|---|---|---|---|---|
| | Day | Night | Day | Night |
| Total Accidents | 90 | 41 | 94 | 28 |
| Persons Injured | 10 | 9 | 9 | 4 |
| Fatalities | 0 | 2 | 0 | 0 |

## A Modern Lighting Program

The modern traffic safety lighting system for Seattle will provide approximately 1300 units, the majority of which will be of the mercury vapor type similar to those installed on Fourth Avenue South, and more recently, on Montlake Boulevard at the University of Washington Stadium and Pavilion.

The pendent luminaires will be placed at heights between 25 and 30 feet, preferably at 30 feet, to the light center, at from 100 to 125 foot centers staggered, except on unusually wide expressways where they will need to be opposite to produce the proper light distribution. The level to be aimed at will be a uniform distribution of 1.0 foot-candle. This 1.0 foot-candle distribution to be aimed at as a goal will no doubt be exceeded in business districts to provide additional coverage.

The suspension in the majority of cases will be by means of upsweep bracket arms on existing poles. Where poles do not exist to give somewhere near the uniform distribution, then separate poles will be necessary.

The upsweep arms will need to be of sufficient length to place the luminaire 6 ft., 8 ft. and 10 ft. out from the curb as the occasion demands.

Service in the majority of cases will be by overhead construction. Advantage will be taken, however, of existing conduit, existing pole bases and existing cable wherever possible.

The luminaires used will no doubt

***Traffic Engineer, City of Seattle, Washington.**

be of both the horizontal and vertical type, and as to distribution, will be of Types II, III and IV, or a combination of these types.

## Current Consumption And Maintenance

Comparing the mercury vapor lamp with the incandescent lamp, we have the following:

| | Incandescent | Mercury Vapor |
|---|---|---|
| Watts per Lumen | 20 | 40 and 50 |
| Life; i.e., Burning Hours | 3,000 | 6,000 |
| Luminosity | Steadily decreasing throughout life | Retain 70% throughout entire life |
| Spectrum | Yellow | Violet Blue Green |
| Light Source | At Point | Elongated 6″—FH-1 16,000 lumen 2″—EH-1 20,000 lumen |

All of the above attributes concerning mercury vapor lamps lend themselves to greater intensities, greater heights and greater distribution and greater coverage with *less materials.*

In the approved methods of calculating the number of luminaires, mounting height and spacing required are chosen. These calculations will show that as the size of the light source is increased, the spacing and mounting heights can be increased, resulting in a reduction of the total number of units required to adequately light the area.

> Every minute of every day a motor vehicle traffic accident results in death or injury to someone. Excessive speed is involved in one out of every three fatal automobile accidents.

Actual readings taken on starting and operation of a 400-watt, 16,000 lumen mercury vapor lamp in Seattle were as follows:

**Between Line and Transformer**

| Cold Starting | Hot and Peak Operation |
|---|---|
| Volts —123 | Volts — 122 |
| Amp. — 3.7 | Amp. — 4.4 |
| Watts — 35 | Watts—480 |

**Between Transformer and Lamp**

| Cold Starting | Hot and Peak Operation |
|---|---|
| Volts — 10 | Volts — 138 |
| Amp. — 3.5 | Amp. — 3.3 |
| Watts — 60 | Watts—420 |

There can be no advantage claimed for the bluish-white color of the mercury vapor lamp. Neither can its color be advanced as a valid criticism. It is generally conceded that given equal illumination values, the color of the source has no bearing on the ability to see or the ease of seeing.

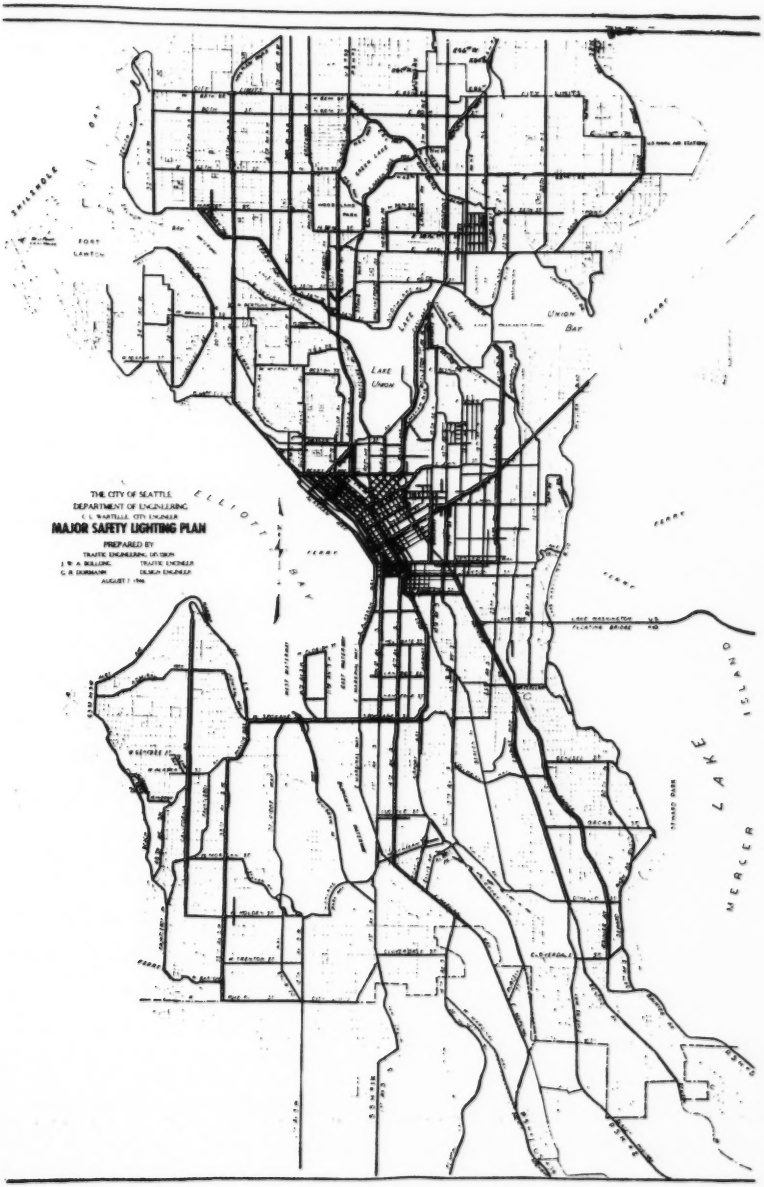
The operation of the lamp on the electrical system, multiple or series, requires the use of a ballast or transformer connection in the circuit for each mercury vapor lamp. The transformer provides the necessary electrical characteristics essential to start the lamp. On the multiple circuit, it is possible to load the circuit to approximately 100% of the rated distribution transformer capacity. On a series circuit, regulators are required.

## Design of Safety Lighting Plan For Seattle

In order to produce a warrant, then, for those streets and avenues requiring illumination both for the elimination of night traffic fatalities and night crime, the following studies were made:

### 1. Night Traffic Fatalities

All of the night traffic fatalities in the City of Seattle for a period of ten years were summarized. The total fatalities in this period from 1935 to 1945 were found to be 468; to January 1, 1948, they were 625. These fatalities were spotted as to location, and a definite pattern was laid out, follow-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ing to a great extent the major arterials. The fatalities were further segregated as to number per mile, so that those avenues and streets having the greatest need wou'd be indicated. Priority as to construction will be based on night fatality rate per mile.

**2. Night Crime**

Knowing that the presence of light was of extreme value in the prevention of crime at night, all of the night crimes covering robbery, attempted robbery, assault, homicide, rape and attempted rape, for a period of one year (1945) were assembled. These totaled 737, segregated as follows: Robbery and attempted robbery, 541; assault and homicide, 162; rape and attempted rape, 34. These were then plotted on a map as to their location and a very definite pattern was laid out as to streets and areas.

**3. General Arterials**

After platting those highways in need of lighting for prevention of night fatalities and crime, it was found that some of the streets indicated for prevention of night fatalities included a portion of those platted for night crime prevention. In addition, then, to these streets and avenues, a group of general arterials was added to complete the lighting on arterials that did not show a high night fatality rate and a high crime rate.

**4. Ornamental Light Systems**

In the analysis of ornamental light standards so prevalent in the 1920's, not only in this city but in other cities throughout the United States, it has been definitely proven that a majority of the light emitted from these ornamental light standards is wasted in the sky, and that by the installation of pendent type lighting, sending the light down upon the pavement, much economy and efficiency can be attained in placing the light upon the surface of the street where it belongs. There was hence platted the location of the existing ornamental light standard systems throughout the city, with the provision that as the other three above referred to are completed, then the ornamental lighting system can be modernized by placing pendent type lighting in place of that now existing. These four then make a completed whole.

**5. Map of Major Safety Lighting Plan**

A map of the major safety lighting plan (see page 477) includes all of the four categories above described, and the mileage summarized is 333.7, comprising 20% of the total mileage of streets and avenues in this city. Upon these avenues and streets is caried 75% of the traffic in the city of Seattle. This then comprises the official Major Safety Lighting Plan, having been adopted by the City Council and so submitted to the people in the recent $4,000,000 bond issue. The people voted 80% for this issue. This installation will make Seattle one of the best lighted cities in America.

The benefits from a modern safety lighting plan are as follows:

1. Speed traffic safety.
2. Reduce crime.
3. Aids police, firemen and sanitation.
4. Improves business.
5. Increases property values.
6. Contributes to civic pride.
7. Enhances prestige and city growth.

## Progress To Date

Improvements authorized by Ordinance:

(a) Fourth Avenue South, et al,—Plans
(b) First Avenue, et al,—Plans
(c) Montlake Boulevard—In
(d) Aurora Avenue—North 39th to North 65th Street

Nearly 7,000 farm residents are killed in automobile accidents each year. More fatal automobile accidents occur in rural areas than in any other location.

# Improving Traffic Flow On Arterials

*by* D. J. FAUSTMAN *(Mem., ITE)**

**Ed. Note: Mr. Faustman concludes his observations begun with a discussion of One-Way Streets in the June issue, by outlining methods of improving traffic flow through use of lane markings, transit operations, and off-street parking. This paper was presented by Mr. Faustman at the University of California's Institute on Street and Highway Problems.**

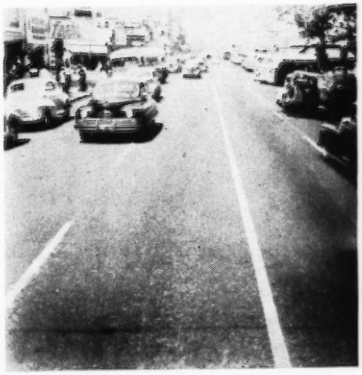
## Lane Markings

Ideal maximum efficiency of a roadway in terms of capacity would be approached if each moving lane consisted of railroad tracks and each vehicle had flanged wheels, thus eliminating weaving and insuring proper utilization of right-of-way width. It is well established that as the number of lanes in one direction increases, the efficiency per lane as measured against a single lane drops rapidly. Any steps, therefore, to keep traffic in line will improve flow. The widely accepted practice is to use center striping accompanied by secondary lane markings. In Sacramento we have adopted as standard the use of center striping and secondary lane markings on all arterials 48 feet and over in width. In supporting this decision, a study made 10 years ago by the writer is presented.

In 1939 Broadway between 16th and 19th Streets was widened from a 48-foot roadway to a 64-foot roadway. This stretch of pavement afforded an excellent opportunity for an investigation of the driving habits of motorists as affected by the presence of center striping and secondary lane marking.

A set of small markings at six-inch intervals was painted across the width of the street to enable an observer to note the points over which auto wheels passed. Observations were made under three sets of conditions: (a) no striping or markings of any kind, (b) with six-inch center stripe only, and (c) with center stripe plus a six-inch secondary line at a distance of 11 feet from the center stripe, the secondary line being a broken line consisting of 10-foot lines at 10-foot intervals.

The presence of a center stripe seemed to make no difference in the driving habits of the motorist. However, the addition of the secondary



**Smoother traffic flow results from four-laning 52 ft. business district. Note buses using far side stops.**

***Traffic Engineer, Sacramento, California.**

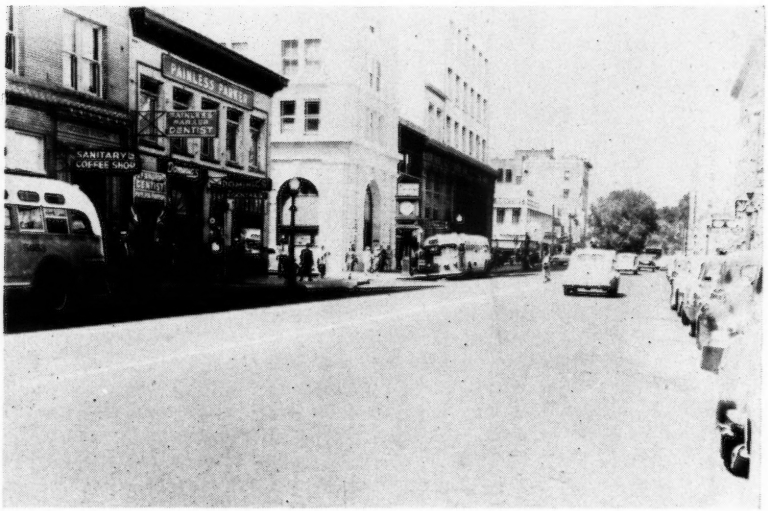
lane lines resulted in a marked change in the paths of the vehicles. With the center stripe only, the majority of the cars were moving single file down the center of the half of the street allotted to each direction of travel. When the secondary lane markings were added, the traffic broke up into two streams, thus gently increasing potential capacity, making it easier to pass, and improving traffic flow in general by more orderly movement.

Those of you who drive on our Sacramento arterials realize that on our 48-foot streets we are squeezing tight and holding our breath, since with 14 feet taken out for the parking lane, we have four eight and one-half-foot lanes for moving vehicles. But they do move the traffic effectively when the secondary lane markings are in place.

## Transit Operations

We are extremely sympathetic to the operating problems of mass transit. In the final analysis, the more people we move by this means, the less downtown parking spaces must be provided and the more efficient will be the per vehicle movement of people. Street facilities and traffic controls which improve passenger car flow on arterials also help the transit company to maintain schedules and provide faster service.

Service on the Sacramento City Lines has been speeded by the retention of the wartime "skip-stops" and by the use of modern automatic shifting diesel buses. Bus stops of adequate length, 65 to 125 feet, permit the buses to discharge passengers at the curb without interference from parked autos and without the buses interfering with moving traffic. Although far side stops are used exclusively in the central business district, no fixed policies are followed on the arterials, rather, the type of stop is chosen which best facilitates the free movement of traffic. We recently established a central loading terminal in the business district utilizing the entire curb space on the west side of




**Consolidated curbside bus loading**

Eighth Street between J and K. In establishing this terminal, three lines were rerouted which resulted in a 60% reduction in left turn movements. Further studies are underway to accomplish other reroutings to reduce left turn movements in the central district.

The Sacramento City Lines utilize two-way radio to assure prompt and competent attention to breakdowns and other emergencies in order that reroutings, turnbacks, repairs or other action may quickly normalize service.

It is our firm conviction that mass transportation is one of the best answers in reducing our congestion problems.

## Off-Street Parking

It has previously been stated that the parking problem is an important factor in congestion. It follows, therefore, that adequate off-street parking is one of the elements in improving traffic flow, particularly in business districts. The citizens of Sacramento last November gave their overwhelming approval to a charter amendment which will enable the city to provide off-street parking facilities. What this charter amendment does is as follows:

(a) Authorizes the City Council to issue revenue bonds to provide funds to acquire property on which to establish off-street parking facilities.

(b) Allocates a maximum of 25% (or $50,000) of the annual revenue from parking meters to help finance the establishment and operation of the project. The City Council has already set aside $50,000 from current parking meter revenue.

The project is self-liquidating with principle and interest on the revenue bonds paid exclusively from the allocation of parking meter revenue and from operating revenues of the facilities.

Studies are underway to select suitable sites on the fringes of the central business district, preferably within two blocks walking distance of any section of the business district. The city proposes to acquire the sites, resorting to condemnation if necessary, and prepare them as parking lots. The final details have not yet been worked out, but one proposal is that the merchants will form an organization to take over the actual operation of the lots on a non-profit basis, that is, retaining only actual operating expenses. It is contemplated that other lots will be eventually established in outlying business districts such as Oak Park.

These lots are designed for accommodating the short time parker only, however, this is the individual that is adding to our congestion by cruising for curb parking spaces. It is anticipated that our off-street parking facilities will be operating by fall.

## Conclusion

In summary, the traffic engineer has been able to successfully treat our cities for arterial congestion by the prescribing of:

1. One-way streets.
2. Lane Markings.
3. Transit operations.
4. Off-street parking.

The remedy must convince the businessmen and motorists of the community of its ability to accomplish the desired results. The traffic engineer must provide the direction and leadership required to make effective these remedies.

Governor Earl Warren has signed a bill which makes California the second state requiring that high school students be taught the rudiments of driver know-how and highway safety. North Dakota already requires that pupils successfully complete such a course prior to graduation.

## Reference Notes

### Total Metered Cities

Parking meter installations during 1948 continued at the phenomenal pace of previous years. Last year, some 390 new cities put in meters making a total of close to 2200 cities operating some 700,000 meters. This is roughly five times the 473 cities using 200,000 meters at the end of the war in 1945.

Pennsylvania with over 235 metered cities occupies the No. ONE spot on the list of states having metered cities, followed in sequence by Ohio with 130, New York with 115, Illinois with 112, and California fifth with 110. Nevada with three and Rhode Island with two bring up the rear in 47th and 48th position.

During the year 55 cities in Indiana and 36 cities in Massachusetts installed meters, to give these states the lead in number of new cities to meterize. Today, Indiana with 70 cities occupies eighth position. Alabama jumped from last place with one metered city at the start of 1948 (Mobile) to 33rd position by installing some 7500 meters in 17 cities.

Estimates are that folks who parked in metered areas of the 2200 cities, kicked-in over $40,000,000 for the privilege. That the meters poured a go!den stream of pennies and nickels into the city treasuries is a well established fact, as for instance:

| City | No. Meters | 1948 Revenue | Average Per Meter |
|---|---|---|---|
| Oak Park, Ill. | 517 | 53,102 | $106 |
| Sacramento, Calif. | 2300 | 231,652 | 100 |
| Richmond, Va. | 650 | 65,312 | 100 |
| Berkeley, Calif. | 894 | 87,691 | 98 |
| Columbia, S. C. | 1221 | 120,207 | 98 |
| Cedar Rapids, Ia. | 995 | 94,400 | 95 |
| Kokomo, Indiana | 425 | 40,122 | 94 |
| Garden City, Kans. | 435 | 38,000 | 90 |
| New Castle, Pa. | 423 | 38,200 | 90 |
| Johnstown, Pa. | 720 | 64,308 | 90 |
| Galesburg, Ill. | 671 | 59,550 | 89 |
| Wichita, Kansas | 1700 | 148,847 | 88 |
| Harrisburg, Pa. | 890 | 78,071 | 87 |
| Streator, Ill. | 411 | 34,848 | 85 |
| Danville, Va. | 334 | 26,684 | 80 |
| Altoona, Pa. | 593 | 46,250 | 78 |
| Lincoln, Neb. | 1034 | 79,385 | 77 |
| Stockton, Calif. | 2500 | 185,957 | 74 |
| White Plains, N. Y. | 860 | 63,518 | 74 |
| Utica, N. Y. | 1325 | 97,480 | 74 |
| Cleveland, Ohio | 2600 | 187,704 | 70 |
| Madison, Wis. | 960 | 66,207 | 69 |
| Syracuse, N. Y. | 1600 | 127,535 | 66 |
| Rochester, N. Y. | 2000 | 127,251 | 64 |
| Endicott, N. Y. | 320 | 19,993 | 62 |
| Lodi, California | 550 | 33,592 | 61 |
| Sunbury, Pa. | 556 | 31,623 | 57 |
| Evansville, Ind. | 1350 | 72,818 | 54 |

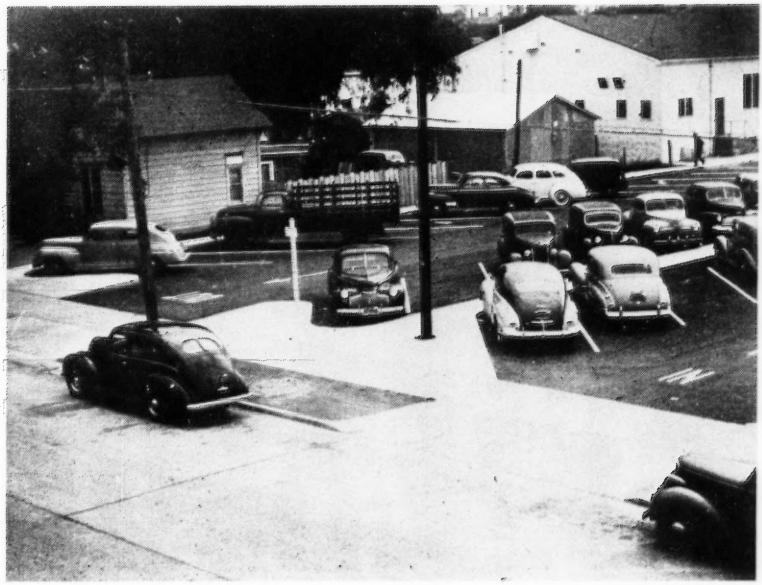
*Duncan Meter Corporation*
*Chicago, Illinois*

## Safer Brake Fluid Developed

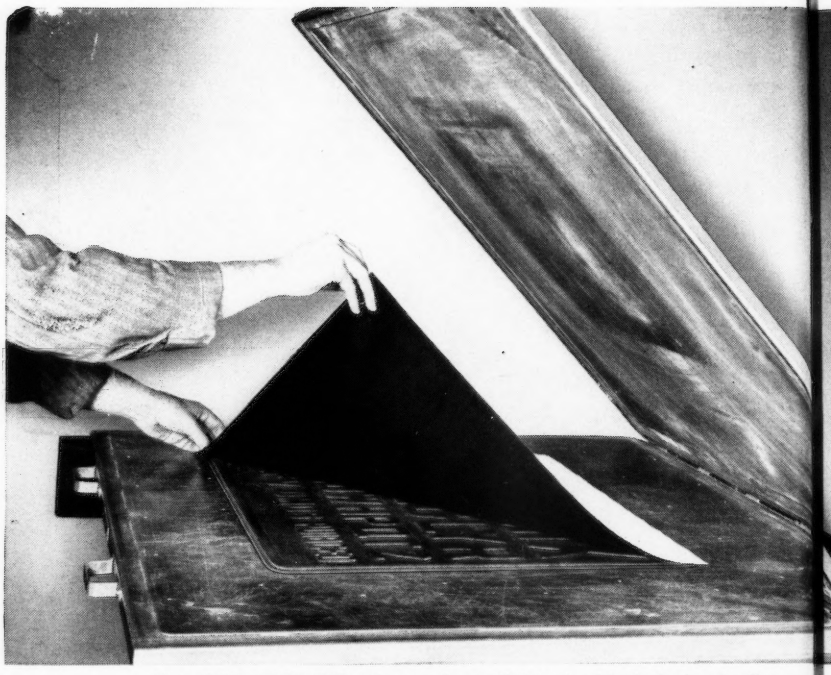
Early in World War II Army Engineers found that many available brake fluids were unsafe for use in Army equipment because they caused brake failure due to corrosion and vapor lock. The Society of Automotive Engineers then went to work and developed a specification for Army brake fluid which did not have these objectionable features. In 1947 the SAE adopted specifications for peace-time fluids—a heavy duty one like the war-time Army specifications and a Moderate Duty specification for use where the fluid will not be exposed to severe driving conditions.

The use of brake fluids which can cause brake failure due to corrosion or vapor lock is hazardous, not only to the occupants of the vehicle in which such fluids are used, but to persons in other vehicles who may be innocently involved in collisions. Vapor lock occurs when too volatile components of the fluid boil and form vapor in the wheel cylinders. The brakes then cease to be hydraulic and no braking action occurs when the foot pedal is depressed.

## Open Discussion



The above photograph shows the entrance and exit to a parking lot in the small Southern California City of Orange—population around 10,000. The lot pictured above extends 105 feet along the street in the foreground and is 132 feet deep. The eight-foot stalls, set at 45 degree angle, are ideally laid out for 39 cars within this area, with a minimum of 18 feet of roadway between parked vehicles. The one-way system assures efficient operation. The "exit" lot shown on the left extends through to the next street an additional 132 feet. This additional lot, only 50 feet wide, belongs to the Orange Post of the American Legion. The Legion operates their lot in cooperation with the two combined lots shown which belong to the City of Orange. The Legion lot provides an additional 21 stalls for a total of 60 in the area. Cars using the Legion lot must enter from the opposite end and exit through the lot shown in the photograph above. The entire parking area is paved and has concrete sidewalks and lights for night parking. *There is no time limit and no charge for parking.* The City of Orange has an ambitious program of off-street parking. Net returns from its 203 parking meters are used exclusively to provide for off-street parking as described above. Additional lots will be purchased as money becomes available.



Type 2 "Scotchlite" Sheeting can be applied to sign blanks by hand roller, squ
roller or with vacuum applicators.

# NOW-Dry Adhesive-Ba
# Type 2 "SCOTCHLITE

Reflective Sheeting is now available *pre-coated* with Type 2 Adhesive. It offers you these specific advantages . . .

- No separate adhesives necessary.
- No delay waiting for adhesives to dry.
- Used for both roller or vacuum application methods.
- No drying racks necessary.

Write today to Dept. TE6 t
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for information on our
equipment for flat signs, or
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If you buy your signs, our n
is yours for the asking, or
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sign distributor.

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*Also makers of "Scotch" Pressure-Sensitive Tap*

General Export: Durex Abrasives Corp., New Rochelle, N.Y.

Adhesive is uniformly applied under rigid factory control, eliminating brushing, spray booths and drying racks.

Longer lasting signs because of "fool-proof" application. Signs are cleaner—stay brighter longer.

REG. U. S. PAT. OFF.

**SCOTCHLITE**

**REFLECTIVE SHEETING**

Made in U. S. A. by

**INNESOTA INING & FG. CO.**

ST. PAUL 6, MINN.

*nsitive Tap* *"3M" Abrasives, "3M" Adhesives*

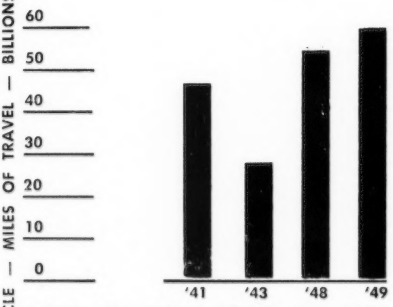
*e, N.Y.* *Canadian Durex Abrasives Ltd., Brantford, Ontario*

## Massachusetts Supreme Court Rules Boston May Contract for Parking Garage Beneath Boston Common

On October 25, 1948, the U. S. Supreme Court refused to take jurisdiction in the appeals of Myron E. Pierce, Alfred P. Lowell, Stuart Rand, et al. (No. 324), and Anna C. McCarthy, Myron E. Pierce, Alfred P. Lowell, et al. (No. 325) vs. City of Boston, from the Superior Court of Massachusetts, County of Suffolk (79 N.E. (2d) 713, April 17, 1948). Motions to dismiss were granted. Appeals were dismissed for want of a substantial Federal question.

*(Highway Research Board Correlation Service—Circular No. 52, February 1949. Supplemental item 21-3, Memorandum No. 21, October 1948.)*

## Traffic Trends




**TRAVEL ON RURAL ROADS FOR FIRST FOUR MONTHS OF 1941, 1943, 1948 AND 1949.**

*Based on Public Roads Administration Data*

NEW PERMANENT STATION TRAFICOUNTER

Below: Counter Open

Here is the improved Permanent Station Traficounter—the latest in the line of Traficounters Streeter-Amet has developed over a period of many years. All highway departments who have relied on Streeter-Amet for help in their traffic problems will appreciate the many advantages of this new Traficounter.

The detection is not affected by any weather—snow or ice. It is designed especially to eliminate rubber tubes or treadles. It detects vehicles at high or low density of traffic.

AUTOMATIC WEIGHT RECORDERS SINCE 1888

STREETER-AMET COMPANY
1726 BELLE PLAINE AVENUE
CHICAGO 13, ILLINOIS

*Write for information regarding this Permanent Station Traficounter.*

# ITE NEWS AND PERSONALS

## Secretary's Column

Due in part to space limitations and, in part, to a practice your Executive Secretary began some time ago, this month's column will be devoted to a brief report on the meeting of the Board of Direction held in Washington, D. C., on June 1st. Eight Board Members were present, including President Mitchell, Vice-President Neal and Secretary Hurd.

Mr. Hurd gave a detailed report of the present financial structure of the Institute. From the present outlook, it appears that we will again operate on a balanced budget, retaining the operating reserve with which we began the current fiscal year. Mr. Hurd also reported the purchase of another $1,000.00 War Bond with the cash reserve in the Fee Fund. The *Institute* now owns five $1,000.00 Bonds and one $500.00 Bond, plus a sufficient cash reserve to make a total net worth of the Fee Fund to date in the amount of $5,880.12. Mr. Hurd also reported that after 19 years of operation the *Institute* had been recognized by the U. S. Collector of Internal Revenue as a tax exempt organization.

Your Executive Secretary briefly reviewed the status of TRAFFIC ENGINEERING magazine to date. It was reported that all present advertisers were apparently in favor of the proposed increase in size of the magazine, to be effected with the October issue. Contracts with new prospective advertisers were progressing satisfactorily, and it is anticipated that the *Institute* will more than meet the increased cost of production of the large issue.

Immediate Past President Seburn, who is also Chairman of the *Institute's* Policy Committee, presented an official report on the question of ITE support of Local Legislation. It was the Policy Committee's recommendation that the *Institute* should officially refrain from entering local administrative controversies involving debatable points of any sort. This, however, does not preclude the *Institute's* providing factual data of such nature that would be of aid to any local official agencies interested. This information would be made available to such official agencies on request and in such a manner as to not involve the *Institute* in any political controversies.

President Mitchell reported that the various chapters of the revised "Traffic Engineering Handbook" were now complete and that a first draft was being prepared for review by selected state, municipal and private traffic engineers. It is hoped that this review will be completed during the summer months and the Handbook ready for final draft by the time of the Annual Meeting.

The Board of Direction also approved *Institute* affiliation with International Road Federation in the capacity of technical adviser. This action came about as a result of a direct request from the Executive Director of IRF, Robert O. Swain (Assoc. Mem, ITE). The Board also approved affiliation as a cooperating agency to the State Department in connection with the forthcoming world-wide Conference on Road and Motor Transport in

Geneva. The *Institute*, along with other official and private agencies, has been requested to review the document currently being prepared by the State Department and other countries for purposes of discussion at the forthcoming conference.

—Robert S. Holmes

## PERSONAL ITEMS

W have just learned that the City of Fresno, **BOB DIER**, Traffic Engineer, has challenged the City of Evanston, **Z. A. FAULKNER**, Traffic Engineer, to compete for the best traffic engineering performance during the year 1949. Fresno made the challenge through a news release and Evanston made a counter-challenge in the same manner. Looks as if the boys are going after the annual ITE award. . . . **ED JOHNSTON**, writing in to ITE headquarters for a supply of membership application blanks. All members take note of this progressive attitude to increase the membership of the Institute. . . . The American City magazine, interested enough in article by **WILBUR S. SMITH** on "Responsibility for Traffic Activities", in April issue, to write a brief review in their Department of Municipal and Civic Publications. . . . **J. AL HEAD** coming East to attend a Council meeting of his college fraternity, of which he is National Secretary. On the side he is routing himself through New York City and Washington, D. C., to chat with traffic engineers. . . . **HERB KLAR**, who is scholarship chairman for the Rensselaer Alumni Committee for the State of New Jersey, has been elected President of the Central Jersey Alumni group of RPI. During the past year, Herb has devoted a considerable portion of his time to screening New Jersey high school applicants for the two four-year scholarships annually awarded by the New Jersey Alumni group of RPI. . . . June 26th was the date, and Philadelphia the place, where


*Wanted . . .*

*Ideas - Brains - Men*

**Wanted—to enlist for service on the RESOLUTIONS COMMITTEE for the 1949 BISCUIT BANTER BREAKFAST, men—real he-men—red blooded Americans with guts and brains.**

**The Program Committee has saddled me with a committee of incompetent, muddle-headed nincompoops.**

**I want BRAINS, not BRAWN!**

**If interested write me at once, and I will assign you a part in the greatest BISCUIT BANTER BREAKFAST of all time.**

**Yours for better banter,**

**W. E. "SKINNY" DeYOUNG**
**Chairman, Resolutions Committee**

*This is a paid advertisement.*

**TED SIEGEL** "tied the knot" with Hilda Larve of Trenton, New Jersey. . . . **JOE HAVENNER** recently named volunteer chairman of the Los Angeles Red Cross Chapter's first aid advisory committee. He was also named to the Chapter's Board of Directors. . . . **COLONEL "MIKE" LYNCH** has left the Greater Los Angeles Chapter, National Safety Council, to work out of National Headquarters in Chicago.

**The above photograph depicts the ceremony in which General Omar M. Bradley, Army Chief of Staff, presented the Department of Army's meritorious civilian award to Elliot V. Parker, (Affiliate, ITE), Army Safety Director. The citation on the award plaque reads as follows:**

**"For meritorius service in performance of duties as U. S. Army Safety Director and Chief of the Safety Branch, Personnel and Administration Division, General Staff, United States Army, from April 1946 to December 1948. By outstanding and exemplary performance above and beyond his directed assignment as U. S. Army Safety Director, he developed the world-wide Army Safety Program which has effected tremendous savings in money, manpower and equipment and gave the U. S. Army a single, unified attack against wasteful and unnecessary accidental suffering and loss.**

**"He demonstrated a high fidelity, and devotion to duty which are a credit to the General Staff, United States Army."**

*—Photo by U. S. Army*

# New Appointments . . .

BENEDICT G. BARKAN, formerly Planning Assistant with the Boston City Planning Board, was recently appointed Associate Engineer in charge of the *Division of Traffic Planning and Design* in the new Traffic Engineering Department in Providence, R. I. The new department's head is Dwight T. Myers, Traffic Engineer, with Roger T. Chandler as Assistant Traffic Engineer. An Associate Engineer to head the *Division of Traffic Control* has not yet been appointed. Number One project contemplated by the Planning and Design Division is a study of transit operations in Provi-

*(See* BARKAN, *page 494)*

GORDON K. GRAVELLE recently joined the staff of the Automotive Safety Foundation as assistant in the Traffic Engineering Division. He has been assigned as resident engineer on a seven-phase traffic study in Albuquerque, New Mexico — a joint project of the State, City, PRA, and ASF. Mr. Gravelle has had wide experience in transportation engineering, both in civilian life and in the Army. In the Corps of Engineers he developed traffic control devices and techniques. Upon transfer to the Transportation Corps, European Theater, he served as Chief of the Planning Branch and later as Deputy Chief of the Control and Planning Division.

Until he joined the Foundation staff, Mr. Gravelle was traffic engineer for

*(See* GRAVELLE, *page 494)*

DWIGHT M. McCRACKEN of 95 Fairbanks Avenue, Wellesley (Mass.), has been promoted to the position of an assistant vice-president of Liberty Mutual Insurance Company, according to an announcement by President S. Bruce Black. In his new position, Mr. McCracken will continue as manager of the insurance company's motor transport bureau.

He joined Liberty Mutual in May, 1935, as a highway safety supervisor for the loss prevention department, became director of the traffic safety bureau in 1939 and manager of the motor transport bureau in 1945. Prior to joining Liberty Mutual, Mr. McCracken was a traffic engineer with the Massachusetts Department of Public Works, the Massachusetts Highway Accident Survey and a traffic advisor for the state department of public safety.

*(See* McCRACKEN *page 497)*

**Harry Porter, Jr., third from left, ITE Director, officially presents Mayor S. G. Ingraham with a plaque won by Evanston for its outstanding traffic engineering record in 1948. Looking on at extreme left are: Z. A. Faulkner, Traffic Engineer, and Lt. Frank M. Andrews, Head of the Traffic Engineering Division, Evanston Police Department. Mr. Porter, in making the presentation, especially commended the city for its program of earmarking all parking meter revenues for the acquisition of the off-the-street parking facilities and for having a full-time traffic engineer in its employee.**

*—Photo by Evanston Photographic Service*

## Yearbook Changes

HAYDEN, JAMES G.
Sect. 5, Ward 18
Percy Jones General Hospital
Battle Creek, Michigan

PETERMAN, WALTER C.
5116B S. Kimbark
Chicago, Illinois

RIGOTTI, ROBERT A.
Dist. Traffic Engineer
SEND MAIL: State Highway Dept.
302 State Office Building
203 North Jefferson Avenue
Saginaw, Michigan

## Filmstrip For Use With High School Driving Course

A new filmstrip, entitled "Smart Driving", suitable for use in high school driver training courses, has been produced jointly by the National Commission on Safety Education of the National Educational Association, and the National Highway Users Conference. The latter organization will have charge of distribution from its headquarters in the National Press Building, Washington, D. C.

## Good Lighting Means Good Business

Of cities reporting to lighting authorities, 88 per cent say modernized street lighting improves business, 78 per cent that it increases property values, 96 per cent that it promotes civic pride, and 96 per cent that it enhances a city's prestige.

**The above photo was taken at presentation ceremonies arranged as a part of the agenda for the regular meeting of the Dallas Citizens' Traffic Commission on May 10, 1949. W. C. Brandes, City Traffic Engineer, left, and City Manager Roderic B. Thomas, right, look on as Carl J. Rutland, second from left, chairman of the Citizens' Traffic Commission, officially presents the ITE Traffic Engineering achievement award to Mayor Wallace H. Savage. Dallas was voted a first place award for outstanding achievement in Traffic Engineering for group two cities in 1948. Carl Rutland officially represented the Institute of Traffic Engineers in the presentation.**

# Here's the Finest Traffic Signal we've ever made

**It's double sealed for brighter signals —LONGER!**

*MR. RALPH A. REID, G-E traffic design engineer, shows how reflector remains in housing when door is opened but can be swung out by releasing thumb latch.*

Take a look at this adjustable traffic signal and we know you'll agree it's the finest General Electric has ever made.

**Double Sealing** — A unique combination of four gaskets forms two separate seals against dust and moisture entering the optical system — another unusual G-E feature—and one that *keeps* light effectiveness high and maintenance low.

**Plus the most effective optical system** ever offered for traffic signals. Uses a special sagged-glass reflector of unusual accuracy. With specially designed lens, meets and even surpasses I.T.E. performance specifications. Minimizes false indications.

**Die-cast Aluminum** — Signal housing and door assembly are die-cast of aluminum for accuracy, long life and good appearance.

**And — real versatility** — Adjustable signals are made up of single, self-contained signal sections. With this uni-sectional construction, a single signal section, or complete signal faces of two or more sections can be made up—for one to four or more directions.

For full details including dimensions and prices, write for bulletin GEA-5071, "Traffic Signals." *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

453-45E

(BARKAN, *cont'd. from page 490)* dence. Ben was an ASF fellow at the Yale Bureau of Highway Traffic during 1947-48, completing the graduate course in June; thus Providence is now served by a trio of men who have received this specialized training.

(GRAVELLE, *cont'd. from page 490)* the Capital Transit Company, Washington, D. C. A civil and transportation engineering graduate of the University of Michigan, Mr. Gravelle completed additional studies at Wayne University, and at Yale University under an Alfred P. Sloan fellowship to the Bureau of Highway Traffic. Prior to entering the Army, he served as Municipal Traffic Engineer for the Michigan State Highway Department.

## London Planning New Traffic Set-up

Britain has a comprehensive traffic plan, including transportation by road, rail, even by foot, for the "Festival of Britain, 1951", the fair projected for the south bank of the Thames, opposite Victoria Embankment.

The festival, marking the centenary of the Great Exhibition of 1851, will tell the story of British life during a century of progress in work, play, discovery, invention and design.

Provision for financing new traffic arteries and parking facilities are contained in a public works bill submitted in the House of Commons by Alfred Barnes, Minister of Transport. The traffic scheme, which will cost at least $8,000,000 includes new streets, underground passageways, escalators and motor buses to the blitzed area on which the exposition will be built.

Parking space will be set aside for 4,000 cars. The bill provides for the acquisition of the land to carry out the schemes.

# SECTION NEWS

## New York Metropolitan Section

The Annual Meeting of the New York Section was held on April 28, 1949. There were 14 members and guests present. The meeting was called to order by President Rittgers at 7:45 P.M.

Makeup of the Section stationery in the form recommended by the Board of Direction was discussed by the members and it was agreed to adopt this form with the recommendation that the size of the seal be increased. Lou Bender reported for the program committee on arrangements for the Summer Outing and stated that his committee was down to three members. He requested that additional members be appointed.

President Rittgers introduced the speaker of the evening, Mr. Walter Rainville, Jr., Research Director of the American Transit Resources Board, who spoke on "The Traffic Engineer in National Security Planning". He gave an excellent talk on the place of the Traffic Engineer in event of war, and provoked a discussion period longer and more interesting than in any recent meeting.

The following members were unanimously elected as officers of the Section for the coming year:

President, Edward G. Wetzel

Vice-President, Herbert A. Keegan

Secretary-Treasurer, Jerome D. Franklin.

## Western Section

The Southern California area group of the Western Section held a dinner meeting at the Rodger Young Auditorium in Los Angeles on April 28. The meeting was attended by ten members and fourteen guests.

# PROOF!

## that CATAPHOTE GLASS REFLECTOR BUTTONS ARE LOWEST COST MEANS OF REFLECTORIZING SIGNS

**8 YEARS OF CONTINUOUS SERVICE** (from 1940 until now) on the Pennsylvania Turnpike (shown above) and these delineators continue to give top visibility under every kind of adverse weather condition. There has been *no* maintenance or replacement of these glass reflector buttons since their installation and their durability has been a big money-saver for the Turnpike.

They should last many more years.
All we know is—

**THEY'RE STILL GOING STRONG!**

*WRITE FOR COMPLETE CATALOG*

## CATAPHOTE CORPORATION

TOLEDO, OHIO

REFLECTORIZED SIGNS AND SIGNALS • GALVANIZED SIGN POSTS • PARKING SIGNS
DANGER SIGNALS • STREET NAME SIGNS • BUTTONS & CHAINS

The business portion of the meeting was devoted to a discussion of the possibility of providing another grade of membership or affiliation with the Western Section in order to interest those persons whose qualifications do not make them eligible for the Associate or Member grades, and who, because of age or for other reasons, are unwilling to accept a Junior membership. After a discussion of the Florida Section provision for admitting "Local Affiliates," the group concurred that it would be best to establish a local provision and have it referred to a committee to be discused at the Annual Meeting of the Section.

It also was agreed upon that local meetings could be made more interesting to members and guests by the presentation and discussion of papers on local problems.

The Nominating Committee of the Western Section has submitted the following nominations for the year 1949-1950:

President, James E. Reading
Vice-President, Fred T. Fowler
Secretary-Treasurer, J. Al Head

Other nominations may be made by the membership. Ballots will be mailed to all members eligible to vote.

Arch Bollong, Ralph Dorsey and Joe Havenner attended the President's Highway Safety Conference in Washington, D. C., June 1 to 3.

The Western Section is pleased to welcome the following new members:

Harry S. Wright
George W. Purser
William N. Price
Lamar W. Gardner
Charles A. Pemberton
Lucius A. Merriam

## Washington Section

The annual meeting of the Washington Section was held at the Fairfax Hotel, Wednesday, May 18, at which the following officers were elected for the year 1949-50:

President, Le Verne Johnson
Vice-President, Wallace Braun
Secretary-Treasurer, William Boardman

Official announcement was made at this time of an invitation from the Engineers Club of Washington to all section members to attend its First Anniversary dinner-dance.

## Midwest Section

In connection with the Third Annual Meeting of the Cook County Traffic Safety Conference, May 2, 1949, the Midwest Chapter of the Institute of Traffic Engineers cooperated with the Cook County Traffic Commission in arranging a luncheon. An address by Carl E. Fritts, Automotive Safety Foundation, Washington, D. C., on the subject "Study of Highway Needs In Various States" was the highlight of this luncheon meeting.

Mr. Fritts very ably outlined the procedures in preparing a comprehensive study of highway needs. His discussion dealt with problems of financing and the classification of highways as well as techniques used in gathering information needed to determine future requirements.

About 25 chapter members were among the 140 attending this luncheon meeting, and guests included mayors, chiefs of police, city managers and state officials.

The luncheon meeting was one of the highlights of this year's conference.

## University of Illinois Student Chapter

Fourteen members of the University of Illinois Student Chapter of the ITE, with Advisor C. C. Wiley, inspected traffic installations in Chicago, Illinois, on April 1st, as guests of the Midwest Section, ITE. Highlights of the eight-hour tour included a visit to the traffic department of Chicago Park District, an inspection of the master

traffic signal control for loop traffic lights, Chicago Transit Authority training center, and a visit to the loop parking lots and shuttle bus service. Members were dinner guests of the Midwest Section. After the dinner they saw a movie explaining design, construction and operation of the hydraulic fins on Chicago's Outer Drive.

Chapter members assisted in a survey of the Champaign-Urbana city bus lines March 23-25. The combination OD, volume, and speed-delay survey is a research project of two graduate student members, J. M. Keneipp and L. W. Markert.

The chapter plans to make a survey of pedestrian-auto safety conditions in streets bordering the University of Illinois campus.

**September 6-16 — NEW HAVEN, CONNECTICUT**
Yale University Institute for Traffic Training. Yale University—Traffic Engineering Course, September 12-16. T. M. Matson, Director, Bureau of Highway Traffic, Strathcona Hall, Yale University, New Haven 11, Connecticut.

**September 11-15—DALLAS, TEXAS**
57th Annual Conference, International Association of Chiefs of Police. Baker Hotel—Executive Secretary, IACP, 1424 K Street, N.W., Washington 5, D. C.

**September 18-21—KANSAS CITY, MISSOURI**
55th Public Works Congress, Municipal Auditorium. Executive Director, American Public Works Association, 1313 E. 60th Street, Chicago, Illinois.

**September 19-23—FRENCH LICK, INDIANA**
Illuminating Engineering Society—National Technical Conference. Executive Secretary, 51 Madison Avenue, New York 10, N. Y.

**September 21-24—OKLAHOMA CITY, OKLAHOMA**
American Association of Motor Vehicle Administration, Biltmore Hotel. Executive Secretary, 910 17th Street, N. W., Washington 6, D. C.

**September 25-28 — WASHINGTON, D. C.**
20th Annual Meeting Institute of Traffic Engineers. Wardman Park Hotel—Executive Secretary, Strathcona Hall, New Haven 11, Conn.

**October 2-5—ATLANTIC CITY, N. J.**
American Transit Association, Annual Convention. Hotel Traymore. Executive Manager, 292 Madison Avenue, New York 17, New York.

**October 2-6—BOSTON, MASS.**
American Society of Planning Officials, Statler Hotel. Executive Director, 1313 E. 60th Street, Chicago, Illinois.

**October 10-12—CLEVELAND, OHIO**
American Society of Planning Officials, Statler Hotel. Executive Secretary, 1313 East 60th Street, Chicago, Illinois.

**October 10-13—PITTSBURGH, PA.**
International Municipal Signal Association. Annual Meeting. Secretary, 11 W. 42nd Street, New York 18, New York.

(McCRACKEN, *cont'd. from pg. 490*)

A native of Muskegon, Michigan, he attended U.C.L.A., received his BS degree from Boston University in 1930 and his MA in 1931 from Harvard where he studied traffic engineering. He is a member of the Insurance Advisory Committee to the American Trucking Association, the National Advisory Committee on Fleet Supervisor Training and the Institute of Traffic Engineers and serves on the Executive Committee of the Accident Prevention Division, City of Boston Cab Association.

# Personalities . . . .

ARTHUR H. BLANCHARD is reticent to provide his date of birth but we have an excellent clue in the fact that he received his C.E. degree from Brown University in 1899. Immediately thereafter he became a member of Brown University's faculty. Not satisfied with his initial degree, he spent the next three years following graduation on a Master's Certificate which he received from Columbia University in 1902. He remained a member of the faculty of Brown University until 1911. During this period (1903-1910) he held the position of Deputy Chief Engineer for the State Board of Public Roads of Rhode Island. It was during this period, also, that he was first introduced to traffic engineering. In 1906, as Deputy Chief Engineer in Rhode Island, he supervised the first 24-hour motor vehicle traffic survey on state highways in the United States.

Blanchard's work at Columbia was apparently well received, as he was enticed away from Brown in 1911 to assume the duties of Professor of Highway Engineering at Columbia University, a position he held for the ensuing six years. The outbreak of World War I found him devoting full-time to the United States Council of National Defense, as a member of the Highway Transport Committee. During the same period, he was Chief, Division of Public Works, U. S. Army Overseas Educational Commission.

At the close of the war, an offer from the University of Michigan

*(See* BLANCHARD, *page 502)*

BERNARD C. HARTUNG was born in Telluride, Colorado, in 1907, which is his only claim to being a native of that state. His family moved to Reno, Nevada, the following year and Bernie has maintained residence since that time, with the exception of an academic year in the East and ten years in Carson City.

Hartung graduated from the University of Nevada with a B.A. degree in 1928. Immediately after graduation he became Assistant Manager of the Reno Chamber of Commerce, a position he held for three years. Followed a four-year stint as Graduate Manager of the University of Nevada.

Bernie became interested in Safety and Traffic work when he was appointed Personnel Manager of Nevada State Highway Department in 1935. Early in 1936 Robert A. Allen, Nevada State Highway Engineer, recognizing the necessity of combating the growing fatality rate on the state's highways, set up a Safety Division within the Department. This move was originally designed to encourage the observance of safety among the 600 employees who were, at that time, operating the 300 pieces of state-owned equipment.

The program within the Department had been under way only a short time when it was obvious that the residents of the state were becoming vitally interested in this move to reduce accidents and fatalities on their highways. Bernie was placed in charge

*(See* HARTUNG, *page 502)*

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(BLANCHARD, *cont'd. from pg. 498)*

proved too attractive to decline and Blanchard was appointed Professor of Highway Engineering and Highway Transport at that University in 1919. In 1920, he was presented the Silver Cigar Humidor by the University of Michigan students in the first undergraduate course in highway transport and traffic control given in the United States.

Among other "firsts", Blanchard states that he was in traffic control and highway transport consultant work well ahead of any serious competition. He first began this activity in 1910, including several investigations in Europe and North Africa relative to traffic control, highway transport and highway engineering. By 1927, this activity had grown to such proportions that he resigned from the University of Michigan to devote full-time as private consultant. Early clients, in addition to foreign service, included the U. S. Bureau of Public Roads, City of New York, and the State Highway Departments of Michigan, New York and Pennsylvania.

Due to his long and active experience in the highway traffic field, Blanchard became one of the 30 charter members of the *Institute* on January 21, 1931. He actively contributed to the growth of the Institute during the early years.

Some of the many interesting assignments undertaken by Blanchard during his long and varied career include United States Reporter to the Second, Third, Fourth, and Fifth International Road Congresses; delivery of addresses in French on "Traffic Control and Highway Transport in the United States" before the Societe des Ingenieurs Civils de France and the Ecole Nationale des Ponts et Chausses; and Editor-in-Chief of American Highway Engineers' Handbook, Highway Engineers' Handbook and Highway Transport Handbook. In addition to his continued affiliation with the ITE, he is a member of ASCE, ASME, SAE, American Society for Metals, Automobile Old Timers, and many other national organizations.

Blanchard's principal hobby (you guessed it!) is world travel. He and Honorary Member Charlie Tilden have for many years vied for honors as to who has covered the greatest mileage in their respective globe-circling activities. Other hobbies include golf and bass fishing in Maine. Although it is not considered a hobby, Blanchard states that he personally traveled from Milano to Como, Italy, on one of the famous high-speed Italian toll highways, at an average speed of 106 miles per hour. Any dubious readers may check this one personally with Mr. Blanchard.

(HARTUNG, *cont'd. from pg. 498)*

as Director of the newly created Traffic and Safety Division and immediately launched a state-wide campaign with the following objectives in view: 1. To establish an adequate accident reporting system; 2. To set up, in cooperation with the Department of Education, a definite training program for both primary and secondary schools; 3. To revise the existing statutes and set up a Motor Vehicle Act; 4. To create and sponsor Safety Committees in all sections of the state, and 5. To construct roadways which would meet the requirements of increased vehicular speeds. As a result of this intensive program the State of Nevada won the National Safety Award for the 11 Western States in 1937.

Bernie continued in this work for the State Highway Department for seven years until 1942, with one year of graduate study in traffic engineering at the Yale Bureau of Highway Traffic in 1938-1939. It was during this period, 1939, that Bernie became a mem-

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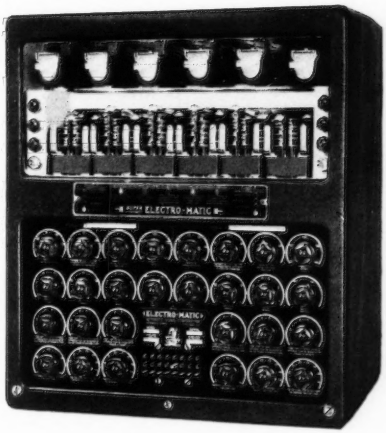

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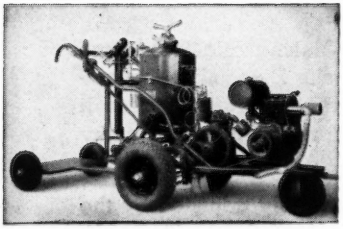
ber of the *Institute of Traffic Engineers*. During the war he served as field representative of the War Production Board in the eleven Western States.

In 1946 he got back into labor relations work as Personnel Manager of Vaughan-Millwork Company in Reno (300 employees) and at present represents this company and a majority of the retail, wholesale, and manufacturing concerns in this area as industrial relations consultant.

Hartung is a member of the Reno Rotary Club and co-chairman of its Traffic and Safety Committee. He is also a member of the City of Reno Safety Council and affiliated with the Governor's Safety Committee for Washoe County. These activities provide his only current tie with the traffic engineering field.

Bernie's principal hobby is along the lines of his present work. He honestly states that he fits best into an assignment dealing chiefly with public relations and safety education. However, he also admits that, from time to time, he gets a strong urge to return directly to the field of traffic engineering. He continues to take an active interest in the *Institute of Traffic Engineers*. Other hobbies include gardening and golf, and according to Bernie neither is done too proficiently but both are thoroughly enjoyed. He also likes to experiment with new devices which may improve the operation of traffic on our highways. He is currently engrossed in a new headlight adjusting device which you may learn more about at a later date.


# ALL-PURPOSE STRIPER



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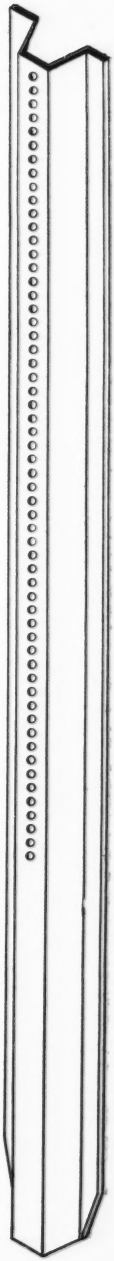
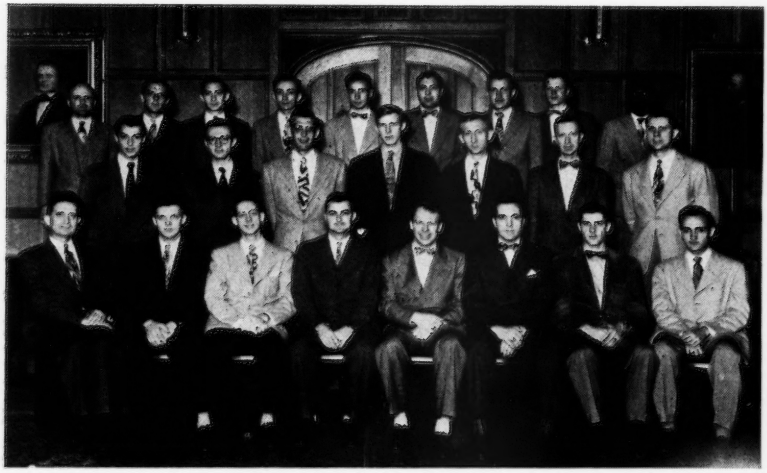


# 24 Engineers Receive Certificates In Highway Traffic at Yale

Twenty-four men have just been awarded Certificates in Highway Traffic by the Committee on Transportation, Yale University, after completing the graduate course in Traffic Engineering at the Yale Bureau of Highway Traffic. The course required a full academic year of graduate study in such matters as the basic theory and practice of traffic regulation, design, planning and administration, dealing with problems of safety and expeditious movement in highway transportation.

Many of the men returned to their former positions with various state highway departments and city agencies. Nine men have gone to work in the urban traffic engineering offices of Cincinnati, Ohio; Detroit, Michigan; Fort Worth, Texas; Montgomery, Alabama; New Orleans, La.; New York Port Authority; Seattle, Washington; and Tulsa, Oklahoma. Eight of the men have joined the traffic engineering departments or maintenance and planning divisions of the state highway departments of California, Illinois, Kentucky, North Carolina, Pennsylvania, Texas and Washington. Two of the men returned to positions in the Department of Interior of Puerto Rico and the Highway Department of the Government of Madras, India. The remaining five men have obtained positions in closely allied fields.

These men will go out to join 190 engineers already in the field who have completed the course of study at the Yale Bureau of Highway Traffic.



The above men have successfully completed the course of study in the Yale Bureau of Highway Traffic.

First row, l. to r. Messrs. William O. Shrader, Herman M. Batts, Jr., Richard H. Oliver, James A. Gallagher, Jr., Bruce R. Culver, Paul W. Rice, Richard A. Overmeyer and William Vivoni, Jr. Second row, l. to. r. Messrs. James L. Ray, George W. Bullock, Frank T. White, Warren S. Quimby, Maurice C. Olson, Byron A. Bledsoe, and John L. Chaffee. Third row, l. to r. Messrs. Deane S. Terry, Jr., William F. Bauch, Jr., Charles A. Goodwin, David B. Martin, Marshall M. Rich, Wilbur H. Miller, Sven Kansman, Thomas R. Galloway, and R. Thillainayagam.

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